

**BEFORE THE UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C.**

Comments Submitted Concerning
Flammability Standards Proposed in
Advance Notices of Proposed Rulemaking
(66 FR 51886-01/2001 WL 1193055)
(68 FR 51563-01/2003 WL 22011174)

October 6, 2003

Bureau of Home Furnishings & Thermal Insulation
Department of Consumer Affairs
State of California
3485 Orange Grove Ave.
North Highlands , CA 95660

TABLE OF CONTENTS

- I. THE NEED FOR AN OPEN FLAME FLAMMABILITY STANDARD
- II. THE DEVELOPMENT OF TB 603
- III. SOLVING THE PROBLEM OF POSSIBLE FEDERAL PREEMPTION
- IV. SUPPORTING DOCUMENTATION **(NOT PART OF PDF FILE)**
 - 1) Technical Bulletin 603 (Proposed Regulation)
 - 2) Section 1371, Title 4 of Cal. Code of Regulations
 - 3) AB 603 (Statute)
 - 4) Protocol for Testing Mattress/Foundation Sets Using a Pair of Gas Burners
 - 5) NISTIR 6497: Flammability Assessment Methodology for Mattresses
 - 6) NIST Technical Note 1446: Estimating Reduced Fire Risk Resulting From An Improved Mattress Flammability Standard
 - 7) TB 603 Rulemaking File

I

THE NEED FOR AN OPEN FLAME FLAMMABILITY STANDARD

There are two basic causes of mattress fires in the United States. One is by smoldering cigarettes. The other is caused by open flames such as matches or lighters. In the early 1970's, the Consumer Product Safety Commission established the federal mattress flammability standards in Section 1632, Title 16, Code of Federal Regulations (16 C.F.R. § 1632). This standard requires that mattresses resist ignition by smoldering cigarettes.

No comparable federal regulation has established flammability standards for open-flame initiated fires. Yet on an annual basis in the United States, mattress fires resulting from open-flame ignition are responsible for hundreds of deaths, thousands of injuries, and millions of dollars in property losses.

Frequently, these fires cause a “flashover” effect where the radiant heat from the burning mattress ignites all flammable materials in the room. In addition, this flashover tends to occur much earlier after ignition of bedding with flame than with a smoldering source such as a cigarette. Tests conducted by the Bureau have shown that a small flame applied to a mattress quickly leads to a tall flame and smoke. Fire statistics also demonstrate that in instances of bedroom flashover fires, roughly one third of the occupants die from intimate fire contact, one third from toxic conditions in the room, and

an additional third from the spread of the fire to other parts of the dwelling.

By the early 1990's, national fire statistics indicated that Federal Mattress Flammability Standards did not materially affect the incidence of residential mattress fires ignited by small open flames. According to a report prepared by the National Association of State Fire Marshals and the Sleep Products Safety Council, the CPSC found in a 1994 study that:

“[B]edding reportedly was the first item ignited in 67% of the mattress/bedding fires; a cigarette reportedly ignited a post-standard mattress in six cases (representing 4% of total fires); and in 45% of the open flame fires, the fire was started by a child less than 5 years of age playing with a lighter.” (*Wide Awake A Study of 220 Fires Involving Mattresses*, p. 4.)

This study was supplemented by the National Association of State Fire Marshals and Sleep Products Safety Council. Their study found that:

“More than one third of the fires (36%) were attributed to cigarette ignitions, while slightly more (40%) were attributed to small open flame ignitions. . . . Small open flame ignition sources were primarily matches, followed by lighters and, to a much lesser degree, candles.

Both smoldering (that is, cigarette) and small open flame ignitions continue to be of concern in first involving mattresses. Of the small

open flame ignitions, matches were responsible for over half (54%).

In spite of efforts to ‘childproof’ cigarette lighters, these devices were cited as the cause of ignition in almost 40% of the cases. . . . As noted later in this report, the people primarily responsible for the vast majority of small open flame ignitions are children, who are generally known to use matches and lighters as their sources of choice.

Small open flames appear to be a significant source of ignition of mattresses and box springs.

“In those cases where the mattress was the first item ignited, 43% were started by a small open flame ignition. Where the box spring was the material first ignited, 38% of the fires were attributable to small open flame ignition.

“This finding is consistent with what is generally known about small open flame ignitions, ***which are not the subject of federal flammability standards.***” (*Id.* at 9 - 10 [Emphasis added].)

II

THE DEVELOPMENT OF TB 603

Significant new technologies have since been developed that can provide product standards offering greater levels of protection for fires caused by both smoldering and open-flame ignition. For example, in October 1992, the Bureau and the mattress industry developed an open-flame standard for mattresses used in high-occupancy institutional settings such as prisons, dormitories, and hospitals. This standard was called California Technical Bulletin 129 (TB 129). It involved test-ignition of mattresses using an open-flame source. TB 129, in turn, provided the impetus for ASTM E-1950, a consensus standard promulgated by the American Society for Testing and Materials. This standard has been adopted by numerous jurisdictions enforcing health-care occupancies.

In 2001, the California Legislature used ASTM E-1950 as the basis for mandating that the Bureau develop new flammability standards designed to produce mattresses and bedding which would pass an open-flame ignition test. This legislation, known as Assembly Bill 603 (AB 603), also mandated that the Bureau adopt appropriate flammability regulations no later than January 1, 2004. (See Business & Professions Code Section 19161, amended by Stats. 2001, c. 199 (A.B. 603), § 3.) It provides in part that:

“(a) All mattresses and box springs manufactured for sale in this state shall be fire retardant. The bureau shall adopt regulations no later than January 1,

2004, requiring that fire retardant mattresses and box springs meet a resistance to open-flame test If the bureau concludes that other bedding contributes to mattress fires, the regulations shall require the other bedding to be flame retardant under the resistance to open-flame test. . . . These regulations shall become inoperative upon the effective date of any federal law or regulation establishing an open-flame resistance standard for these products.”

Accordingly, the Bureau developed regulations which incorporated a document known as TB 603. These regulations were noticed for public comment earlier this year. After comments were received, the Bureau modified the duration of the test required by TB 603 from one hour to 30 minutes and increased the maximum permissible heat release rate from 150 to 200 kilowatts. This modified version of TB 603 has now been submitted to the Office of Administrative Law for final approval and filing with the California Secretary of State.

Under the Bureau’s proposed regulations, a mattress must pass an open flame test which is described in detail in Technical Bulletin 603. (Exhibit 1.) The test is conducted using two T-shaped burners. One burner directs flames onto the top surface of the mattress while the other does so on the side and foundation. These ignition sources are designed to replicate localized conditions when a mattress is ignited by burning

bedclothing. (*Id.* at p. 4.)

The test is conducted for 30 minutes. A mattress fails to pass the test if either of the following occur:

- 1) The rate of heat release exceeds 200 kilowatts.
- 2) The total heat released in the first 10 minutes exceeds 25 megajoules.

(*Id.* at pp. 14 - 15.)

The two critical standards established by TB 603 are the duration of the test and the 200 kw maximum heat release rate. Significant heat release rates from a mattress and the bed clothing burning simultaneously can quickly lead to a phenomena known as “flashover.” This occurs when “radiant heat from the hot smoke accumulating in the upper portions of the room ignites all flammable materials within the room.” (Exhibit 6: NIST Technical Note 1446, p. 8.) From that point, the fire will quickly spread to other rooms in the dwelling. If the heat release from a burning mattress in excess of 200 kw is combined with the corresponding heat release from burning bedclothes, there is a realistic probability that the flashover point may be reached. With a 200 kw limit, there is a good possibility that flashover would be avoided or, at least, delayed. According to the California Fire Chiefs Association:

“Mattress and bedding fires ignited by an open flame source begin and spread very quickly. Toxic gases will kill even before a smoke detector can signal

an alarm. Once a mattress becomes fully involved in a fire, toxic gases and intense heat create the deadly, destructive condition known as flashover that can, and too often does, kill entire families in their sleep.”

III

IMPLEMENTING TB 603

TB 603 is a new finished product standard, which has little or no testing and compliance history. The basic protocol was developed at the NIST-National Institute of Standards and Development’s Building and Fire Research Laboratory (BFRL) under contract with the International Sleep Products Association and several other affected trade associations. The Bureau collaborated closely with NIST on the protocol research and conducted a number of the tests in the final phase of the research.

A. Precision and Bias Study

Given the scale and relative engineering complexity of the test protocol and the variety of products subject to it, a formal precision and bias study of the test is necessary. It is the Bureau’s position that this study is essential to verify the credibility of the new standard as a viable and robust tool to enhance the fire safety of mattress products by improving their open-flame resistance. The study develops an understanding of the

amount of inherent agreement expected in laboratory results when this test protocol is used. This can only be obtained by conducting a formal inter-laboratory precision and bias study, following the guidelines set forth in the American Society for Testing and Materials (ASTM) procedure, ASTM E-691-99, “Standard Practice for Conducting an Inter-laboratory Study to Determine the Precision of a Test Method”. ASTM is a voluntary standard development organization that recognizes, nationally and internationally, technically competent standards. The study of precision and bias ensures technically competent standards having the highest credibility when critically examined for action by commercial, legal, or regulatory entities.

Once the Precision and Bias Statement is formulated for the standard, it can be used as a general guideline or benchmark to establish two types of precision. The first precision statement describes the level of variability to be expected between test results when the test method is conducted repeatedly in one laboratory, using a specific set of conditions, on multiple specimens of a specific product. This precision parameter is known as “repeatability” or variability. A second measure of precision is “reproducibility”, a measure of the level of agreement when a specific product or group of different products, are tested in a number of different laboratories. This is known as an inter-laboratory study. Each of these studies generates standard deviation values, which represent the amount of natural bias or variation expected in the result, when the test is

performed. Also, without these precision statements, it is impossible for any regulatory authority, or laboratory accreditation agency, to have adequate confidence in the data generated to take further action.

B. Laboratory Accreditation

Additional validity can be gained for the TB 603 standard by allowing laboratory accreditation agencies, such as the National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of Laboratory Accreditation (A2LA) or others, to issue formal accreditation authority to laboratories that have demonstrated proficiency in conducting this test. This provides a level of assurance that all laboratories testing to this standard and certifying products, are using procedures and equipment that generate test results that fall within the expected bias of the test protocol. The Bureau's and the U.S. Consumer Product Safety Commission's (CPSC) laboratories, if they desired, could be certified by these accreditation entities as well. To establish the accreditation process, the Bureau would have to seek legislative authority and draft regulations as is now the case with thermal insulation.

C. Harmonization of California and Federal Standards

The Consumer Product Safety Commission (CPSC) has had a mandatory, federal standard for the smolder resistance of mattresses and mattress pads since 1973. The California Bureau adopted an identical standard shortly after that and both agencies

enforce the standard through an interagency agreement, sharing information, when needed, on tips, violations, case settlements and other issues. This synergy has been effective in driving down the level of non-compliant smolder-prone mattresses in the U.S. market to a low level, with resulting significant gains in bedding fire safety.

The technological feasibility of the new California mattress open-flame standard has been established and will be validated by the precision and bias study and could be further enhanced by possible laboratory accreditation. However, at this time the standard is only set forth in California, creating an inconsistency for industry and consumers. Without a national standard enforced by CPSC, there will be ongoing consumer confusion over the level of protection they are buying in mattress products, the need for manufacturer's, importers and wholesalers to maintain dual inventories, and possibly other interstate commerce and restraint of trade issues. The lack of a mattress standard protecting against open-flame in the other 49 states causes a general disincentive for manufacturers to produce mattresses meeting just the California standard. It can stifle or slow innovation leading to research, scale-up and production of more fire resistant materials and products that would be developed more aggressively should the standard be harmonized across all 50 states. While, large manufacturers have already stated that they will make all of their mattress products to the California standard, regardless of the state in which they are sold, a national standard would reinforce that undertaking.

Implementation of a harmonized federal standard will eliminate an uneven system of fire protection.

III

SOLVING THE PROBLEM OF POSSIBLE FEDERAL PREEMPTION

If TB 603 were codified as a regulatory standard in California, the issue of whether it is preempted by federal law will undoubtedly have to be confronted. Title 15, Section 1203, United States Code (15 U.S.C. § 1203) provides that:

“Except as provided in subsections (b) and (c) of this section, whenever a flammability standard or other regulation for a fabric related material, or product is in effect under this chapter, no State or political subdivision of a State may establish or continue in effect a flammability standard or other regulation for such fabric, related material, or product if the standard or other regulation is designed to protect against the same risk of occurrence of fire”

The applicable Federal flammability procedures and standards are set forth in 16 C.F.R. part 1632. They test the flame-resistant qualities of mattresses and mattress pads when the ignition source is a lit cigarette.

Thus, in this situation the issue of preemption would turn on whether

both California and the Federal flammability standards address the same “risk of occurrence of fire.”

In 1983, the General Counsel for the CPSC issued an opinion which concluded that the risk of occurrence of fire from two different ignition sources was the same. Principal reliance was placed on the legislative history of the Federal Flammability Act (“FFA”). It states in part that:

“[A] State standard designed to protect against the risk of injury from a fabric catching on fire would be preempted by a Federal flammability standard covering the same fabric even though the Federal standard called for tests using matches and the State standard called for tests using cigarettes. When an item is covered by a Federal flammability standard , . . . a different State or local flammability requirement applicable to the same item will be preempted since both are designed to protect against the same risk, that is the occurrence of or injury from fire.” (H.R. Rep. No. 94-1022, 94th Cong., 2d Sess. 29 (1976).)

The CPSC General Counsel then concluded from this legislative history that:

“[T]he same risk of occurrence of fire’ means that, notwithstanding the fact that a state/local requirement uses a different ignition source to test an item than does a requirement under an FFA standard, the risk of occurrence of fire

involving that item is the same for purposes of preemption.” (Letter of Martin Howard Katz, dated Dec. 8, 1983.)

The open-flame hazard, however, is a far more serious fire risk than that posed by a smoldering object. An open flame can lead to major, life-threatening combustion of bedding materials in two to three minutes as opposed to 30-45 minutes for a smoldering object. Thus, what appears to be significant from a hazard standpoint is not the class of products involved, but the specific source of combustion.

In addition, the legislative history on which the 1983 CPSC General Counsel opinion is based was issued in 1976. In the ensuing twenty seven (27) years, much more has been learned about mattress fires and their origins.

According to a 1997 publication titled *Wide Awake A Study of 220 Fires Involving Mattresses* issued by the National Association of State Fire Marshals and the Sleep Products Safety Council:

“In the case of small open flame ignitions (by matches, lighters or candles) of residential mattresses or bedclothing, no flammability standards currently exist. Deaths attributed to small open flame ignitions have not shown a significant downward trend since 1980. This has been cause for concern among federal regulators, fire officials and the mattress industry alike.” (p. 4.)

This report also found a significant difference in the origins of cigarette fires versus open flame fires. “Two-thirds of the small open flame ignitions were found to be started by children 14 years old and younger, while three fourths of the cigarette ignitions involved persons more than 25 years old.” (*Id.* at 11.) Consequently, one of the recommendations of the study was that:

“Feasible small open flame ignition standards should be explored for mattresses, box springs and bedclothing. Small open flames were the source of ignition approximately 40% of the time for these three items. Resistance to small open flames could conceivably cut the ignition rate of these materials considerably.” (*Id.* at 15 [Emphasis in original].)

This fundamental difference in the two types of risks of fire hazards was also emphasized to the Bureau by the California Fire Chiefs Association. It stated in regulatory comments submitted to the Bureau that:

“From interviews and investigations at the scene of mattress fires, we know that some fires begin very slowly with a carelessly discarded cigarette that may smolder and burn through several layers of bedding before eventually igniting a mattress. Mattress and bedding fires ignited by an open flame source begin and spread very quickly. Toxic gases will kill even before a smoke detector can signal an alarm. Once a mattress becomes fully involved

in a fire, toxic gases and intense heat create the deadly, destructive condition known as flashover that can, and too often does, kill entire families in their sleep.”

More importantly, the California State Legislature has recognized the fundamental difference between open-flame versus smoldering fires in official findings which were included with Assembly Bill 603. It found and declared that:

“Beginning in the 1990's, national fire statistics indicated that the Federal Mattress Flammability Standard did not materially affect the incidence of residential mattress fires ignited by small open flames.” (2001 STATS., Ch. 199, Section 1.)

Given these authorities, the Bureau believes that federal flammability standards address a fundamentally different risk or hazard than does Assembly Bill 603 and the resultant TB 603. The applicable CPSC standards require that mattresses and associated products meet certain flame-resistant standards associated with fires caused by smoldering objects such as cigarettes. Technical Bulletin 603, however, establishes a standard for fires caused by open-flame sources. These requirements would thus be in addition to, but not in conflict with, existing CPSC standards. If that is the case, then TB 603 would not be preempted under Federal law. (15 U.S.C. § 1203(a).)

As CPSC continues the rulemaking process initially announced in the Advance Notice of Proposed Rulemaking on October 11, 2001 and now in a subsequent Advance Notice dated August 27, 2003, it could address the option recommended in these notices concerning the adoption of an open flame flammability standard. We request CPSC adopt TB 603 as its open flame standard pursuant to this rulemaking process. If this were done, then the potential conflict between California and federal law, as well as the issue of preemption, would disappear.

IV

SUPPORTING DOCUMENTATION (NOT PART OF PDF FILE)